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EXAMINER	
WILLIAMS, LAWRENCE B	

ART UNIT	PAPER NUMBER
2638	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/965,242	RAGHAVAN ET AL.	
	Examiner	Art Unit	
	Lawrence B. Williams	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment filed on 14 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-9,11-17,20,23-25,28 and 32-45* is/are rejected.

7)☒ Claim(s) *10,18-22,26,27 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 7-49 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 7-9, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280).

(1) With regard to claim 7, Wingo discloses in Fig. 1, a transmission system, comprising: a plurality of receivers (RX1-RXN), each of the plurality of receivers receiving signals from one of a plurality of transmission bands on a single transmission medium (Fig. 1, element 31; col. 2, lines 6-17). Wingo does not however disclose the make up of the receivers. However, Sandberg et al. teaches in Fig(s). 1 and 2, a receiver wherein the receiver comprises a down converter (Fig. 2, elements 201, 211) that converts an input signal from the one of the plurality of transmission bands to a base band; a filter (Fig. 2, elements 202, 212) coupled to receive signals from the down converter, the filter substantially filtering out signals not in the base band; an analog-to-digital converter (Fig. 2, elements 203, 213) coupled to receive signals from the filter and

generate digitized signals; an equalizer (Fig. 1, element 124; Fig. 2, element 221) coupled to receive the digitized signals; and a decoder (Fig. 1, element 128) coupled to receive signals from the equalizer and generate recreated data, the recreated data being substantially the same data transmitted by a corresponding transmitter (col. 1, line 65- col. 2, line 3).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63- col. 2, line 3).

(2) With regard to claim 8, Sandberg et al. also discloses in Fig. 2, wherein the down-converter creates an in-phase signal and a quadrature signal, the in-phase signal being the input signal multiplied by a cosine function at the frequency of the one of the plurality of transmission bands and the quadrature signal being the input signal multiplied by a sine function at the frequency of the one of the plurality of transmission bands (col. 2, lines 20-26).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63- col. 2, line 3).

(3) With regard to claim 9, Sandberg et al. also discloses in Fig. 2, wherein the filter includes an in-phase filter (202) filtering the in-phase signal and a quadrature filter (212) filtering the quadrature signal.

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63 - col. 2, line 3).

(4) With regard to claim 15, claim 15 inherits all limitations of claim 8 above. As noted above, Wingo in combination with Sandberg et al. discloses all limitations of claim 8. Furthermore Sandberg et al. discloses in Fig. 2, wherein the analog-to-digital converter includes a first analog-to- digital converter (203) coupled to receive signals from the in-phase filter (202) and a second analog-to-digital converter (213) coupled to receive signals from the quadrature filter (213).

3. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 9 above, and further in view of Aono et al. (US Patent 5,844,950).

(1) With regard to claim 11, claim 11 inherits all limitations of claim 8 above. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 8. They do not however disclose the system further including an amplifier coupled between the filter and the analog-to-digital converter, the amplifier amplifying an in-phase filtered signal from the in-phase filter and a quadrature filter signal from the quadrature filter such that the analog-to-digital converter is filled.

However, Aono et al. discloses in Fig. 12, a cross polarization interference canceller wherein he teaches a system including an amplifier coupled between the filter and the analog-to-digital converter (106_1, 106_2) the amplifier (105_1, 105_2) amplifying an

in-phase filtered signal from the in-phase filter and a quadrature filter signal from the quadrature filter such that the analog-to-digital converter is filled (col. 9, line 64- col. 10, line 12).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Aono et al. with the invention of Wingo in combination with Sandberg et al. for to increase accuracy of the A/D converter.

(2) With regard to claim 12, Aono et al. also discloses in Fig. 12, wherein an in-phase gain (105_1) of the amplifier and the quadrature gain of the amplifier (105_2) are adaptively chosen in an automatic gain controller.

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Aono et al. with the invention of Wingo in combination with Sandberg et al. for to increase accuracy of the A/D converter.

(3) With regard to claim 13, Aono et al. also discloses in Fig. 12, wherein the automatic gain controller sets the in-phase gain and the quadrature gain based on the digitized signals from the analog to digital converters (col. 9, line 64 - col. 10, line 12).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Aono et al. with the invention of Wingo in combination with Sandberg et al. for to increase accuracy of the A/D converter.

(4) With regard to claim 14, though, Aono et al. does not explicitly teach wherein the in-phase and the quadrature gain are equal, it would be inherent that the gains could be equal if the feedback system determines that the dc offsets of both the in-phase and quadrature signals are equal.

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Aono et al. with the invention of Wingo in combination with Sandberg et al. for to increase accuracy of the A/D converter.

(5) With regard to claim 15, Aono et al. also discloses in Fig. 12, wherein the analog-to-digital converter includes a first analog-to-digital converter (106_1) coupled to receive signals from the in-phase filter and a second analog-to-digital converter (106_2) coupled to receive signals from the quadrature filter.

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Aono et al. with the invention of Wingo in combination with Sandberg et al. for to increase accuracy of the A/D converter.

4. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 8 above, and further in view of LeFever (US Patent 4,599,732).

(1) With regard to claim 16, claim 16 inherits all limitations of claim 15. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claims 15. They do not however disclose the system including a correction circuit coupled between the analog-to-digital converter and the equalizer.

However, LeFever discloses in Fig. 2, a technique for acquiring timing and frequency synchronization in which he teaches a receiver wherein the system including a correction circuit (38) coupled between the analog-to-digital converter (31) and the equalizer (34).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to perform instantaneous phase corrections (col. 5, lines 12-28).

(2) With regard to claim 17, LeFever also discloses wherein the correction circuit includes an adjustment to correct phases between the in-phase signal and the quadrature signal (col. 5, lines 12-28).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to perform instantaneous phase corrections (col. 5, lines 12-28).

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 8 above, and further in view of LeFever (US Patent 4,599,732).

As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 8 above. They do not however disclose wherein a phase rotator circuit is coupled between the analog-to-digital converter and the equalizer.

However, LeFever discloses in Fig. 2, a technique for acquiring timing and frequency synchronization in which he teaches a receiver wherein a phase rotator circuit (38) is coupled between an analog-to-digital converter (31) and an equalizer (34).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to perform instantaneous phase corrections (col. 5, lines 12-28).

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 8 above, in view of LeFever (US Patent 4,599,732) and further in view of Leyonhjelm et al. (US Patent 6,351,677 B1).

As noted above, Wingo in combination with Sandberg et al. and LeFever disclose all limitations of claim 23 above. They do not however disclose wherein a parameter of the phase rotator circuit is adaptively chosen. However, Leyonhjelm et al. discloses a wherein a parameter of a phase rotator circuit is adaptively chosen (col. 9, lines 23-35).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings Leyonhjelm et al. with the invention of Wingo in combination with Sandberg et al. and LeFever as a method of phase aligning the in phase and quadrature signals.

7. Claims 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 8 above, and further in view of Sasaki (US Patent 6,121,828).

(1) With regard to claim 25, claim 25 inherits all limitations of claim 8 above. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 8. They do not however disclose wherein an amplifier is coupled between the equalizer and the decoder.

However, Sasaki discloses in Fig. 3, a demodulator wherein he teaches an amplifier (81, 82) coupled after an equalizer (70; the decoder though not shown would be inherent for the demodulator).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Wing in combination with Sandberg et al. as a method of maintaining an average power output of the signals.

(2) With regard to claim 28, Sasaki also discloses wherein an in-phase gain and a quadrature gain of the amplifier are adaptively chosen from error signals calculated from sliced values (col. 4, line 60- col. 5, line 4).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Wing in combination with Sandberg et al. as a method of maintaining an average power output of the signals.

(3) With regard to claim 29, Sasaki also discloses wherein the sliced values are determined from input signals (Fig. 3, output signals 6, 7) to the decoder (Again, though not disclosed, the decoder is inherent in the system).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Wing in combination with Sandberg et al. as a method of maintaining an average power output of the signals.

4. Claims 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) and further in view of Perlow (US Patent 6,351,293 B1).

(1) With regard to claim 32, claim 32 inherits all limitations of claim 7, above. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 7, above. They do not however disclose wherein the equalizer is a complex equalizer

executing a transfer function, the transfer function having parameters $C_k^x(j)$ and $C_k^y(j)$ where j is an integer.

However, Perlow discloses in Fig. 2, a decision directed phase detector wherein he teaches a complex equalizer executing a transfer function. Though Perlow is silent as to the parameters of the transfer function, it is well known in the art that there would be various parameters in the implementation of the equalizer (transfer function, taps, weights, coefficients, etc.) and it would be a mere design choice to designate coefficients for these parameters, as applicant has claimed no distinct use for the claimed parameters.

(2) With regard to claims 33-37, the claims constitute a mere design choice of parameter quantities, as applicant has claimed no distinct use for the claimed parameters. Therefore the parameters would not constitute a patentable inventive step.

8. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280).

(1) With regard to claim 38, Wingo discloses in Fig. 1, a method of receiving data, comprising: receiving an input signal into a plurality of receivers (RX1-RXN), coupled to a single transmission medium (Fig. 1, element 31), each of the plurality of receivers receiving signals from one of a plurality of transmission bands (col. 2, lines 6-17). Wingo does not disclose the method of the receivers.

However, Sandberg et al. discloses in Fig(s). 1 and 2, a method of receiving comprising; down-converting (Fig. 2, elements 201, 211) the input signal to obtain a base band signal corresponding to one of the plurality of transmission bands; filtering (Fig. 2, elements 202, 212) the base band signal to remove signals not in the base band; digitizing

(Fig. 2, elements 203, 213) the filtered base band signal to obtain a digitized signal; equalizing (Fig. 2, element 221, Fig. 1, element 124) the digitized signal; and decoding (Fig. 1, element 128) the digitized signal to recover data that is substantially the same as that transmitted by a corresponding transmitter (col. 1. line 63- col. 2, line 3).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63 - col. 2, line 3).

(2) With regard to claim 39, Sandberg et al. also discloses in Fig. 2, wherein the down-converting the input signal (X(t)) includes: multiplying the input signal by a cosine function at the frequency of the one of the plurality of transmission bands to obtain an in-phase signal; and multiplying the input signal by a sine function at the frequency of the one of the plurality of transmission bands to obtain a quadrature signal, wherein the base band signal includes the in-phase signal and the quadrature signal (col. 2, lines 20-26).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63 - col. 2, line 3).

9. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 39 above, and further in view of LeFever (US Patent 4,599,732).

(1) With regard to claim 41, as noted above, Wingo in combination with Sandberg

et al. disclose all limitations of claim 39 above. They do not however disclose adjusting the phase between the in-phase signal and the quadrature signal of the baseband signal.

However, LeFever teaches in Fig. 2, a technique for acquiring timing and frequency synchronization in a receiver wherein he discloses adjusting the phase between the in-phase signal and the quadrature signal of the baseband signal (col. 2, lines 12-28).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to perform instantaneous phase corrections (col. 5, lines 12-28).

(2) With regard to claim 42, LeFever also teaches providing a quadrature correction (col. 2, lines 12-28).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to perform instantaneous phase corrections (col. 5, lines 12-28).

10. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 39 above, and further in view of Hwang et al. (US Patent 6,441,683 B1).

Claim 43 inherits all limitations of claim 39 above. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 39 above. They do not however disclose the method further including slicing recovered data. However, Hwang et al. teaches a device for recovering frequency redundant data wherein he discloses equalized I and Q signals output for data recovery in a slicer (col. 5, lines 56-61).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Hwang et al. with the invention of Wingo in combination with Sandberg et al. as a method of mapping each combination of an I and Q value to a defined constellation coordinate (col. 5, line 63-col. 6, line 10).

11. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280) as applied to claim 38 above, and further in view of LeFever (US Patent 4,599,732).

Claim 44 inherits all limitations of claim 38 above. As noted above, Wingo in combination with Sandberg et al. disclose all limitations of claim 38. They do not however disclose the method including adaptively choosing at least one parameter.

However, LeFever teaches in Fig. 2, a technique for acquiring timing and frequency synchronization in a receiver wherein he discloses adaptively choosing at least one parameter (col. 5, lines 35-41).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of LeFever with the invention of Wingo in combination with Sandberg et al. to maintain accurate symbol correction during changing conditions of the received signal.

12. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wingo (US Patent 6,128,114) in view of Sandberg et al. (US Patent 5,715,280).

Wingo discloses in Fig. 1, a receiver system (17), comprising: means (WDM, RX1-RXN) for receiving an input signal from a single transmission medium (31), the

input signal including a plurality of transmission bands (col. 2, lines 6-17). Wingo does not however disclose the means for down-converting the input signal to receive a base-band signal; means for obtaining a digital signal from the base-band signal; means for equalizing the digital signal; means for decoding the digital signal to recover data transmitted by a corresponding transmitter.

However Sandberg et al. discloses in Fig(s). 1 and 2, a method for demodulating data in a multicarrier transmission system wherein he discloses means for down-converting (Fig. 2, elements 201, 211) the input signal (X(t)) to receive a base-band signal; means (Fig. 2, element 202, 212) for obtaining a digital signal from the base-band signal; means for equalizing (Fig. 1, element 124, Fig. 2, element 221) the digital signal; means for decoding (Fig. 1, element 128) the digital signal to recover data transmitted by a corresponding transmitter (col. 1, line 65 - col. 2, line 3).

It would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Sandberg et al. with the teaching of Wingo as a method of allowing each user in a multi-carrier transmission system to decode only the portion of the data stream intended for that particular user (col. 1. line 63 - col. 2, line 3).

Allowable Subject Matter

13. Claim 10, 18-22, 26-27, 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Sommer et al. discloses in US Patent 6,647,071 B2 Method and Apparatus For Equalization and Tracking of Coded Digital Communications Signals.

b.) Iwamatsu discloses in US Patent 5,852,629 Repeater.

c.) Fulton discloses in US Patent 5,604,768 Frequency Synchronized BiDirectional Radio System.

d.) Mandyam discloses in US Patent 6,831,954 B1 Apparatus, and Associated Method, For Compensating For Distortion Introduced Upon A Send Signal By An Amplifier.

e.) Maruyama discloses in US Patent 6,522,702 B1 Radio Data Communication Terminal.

f.) Brilka et al. disclose in US Patent 2004/0130483 B1 Down-Converter.

g.) Koslov discloses in US Patent 6,004,112 Method and Apparatus For correcting Amplitude and Phase Imbalances In Demodulation.

h.) Aly et al. discloses in US Patent 4,995,031 Equalizer For ISDN-U Interface.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER

lbw
January 23, 2006